Creative Methods to Envision Nursing Practices Addressing Antimicrobial Resistance (AMR)

A report on the use of arts and humanities approaches to co-design healthcare service innovation

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Foreword

Re-envisaging Infection Practice Ecologies in Nursing (RIPEN) through Arts and Humanities Approaches is a collaborative research project that has used a novel combination of methods to explore and develop nursing's engagement with the pressing problem of antimicrobial resistance (AMR).

This report presents an overview of the rationale for, and design of, the project before featuring the methods used in the workshops that were central to its progress. In the third section we reflect on the learning that has accrued and this is then summarised in the final section along with specific recommendations.

In presenting this material we hope to give the reader insight into how we have addressed RIPEN's central question: How can relevant arts and humanities-based approaches help nurses to re-envisage their infection control practice ecologies in response to antimicrobial resistance? We believe this should be of relevance to four main audiences:

Nursing and healthcare professionals engaged in practice, education and/or research to address antimicrobial resistance and infection prevention

Designers, artists and researchers using and developing creative methodologies applied to healthcare practice and service improvement.

Policymakers, activists, public officials and funders seeking to further understand and explore the creative potential of innovative approaches to complex healthcare challenges.

Communities of practice interested in exploring the use of co-design and visual methods to understand complex challenges and opportunities in healthcare.

Whatever your angle of interest, we warmly invite you to read on, use and share the report, and feedback your thoughts.

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On behalf of the whole RIPEN team (see Acknowledgements)
March 2020

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RIPEN research team is: Dr Colin Macduff, Senior Research Fellow, School of Design, Glasgow School of Art; Dr Alison Prendiville, Reader School of Graphic Design, London College of Communication, University of the Arts London; Professor Anne Marie Rafferty, Professor of Nursing Policy, Nightingale School of Nursing and Midwifery, King's College London, and President of the Royal College of Nursing; Dr Caroline King, Research Fellow, Department of Nursing and Community Health, Glasgow Caledonian University; Fernando Carvalho, Postdoctoral Research Fellow, London College of Communication, University of the Arts London; Professor Kay Currie, Professor of Nursing and Applied Healthcare Research, School of Health and Life Sciences, Glasgow Caledonian University; Dr Enrique Castro-Sánchez, Lead Research Nurse, Health Protection Research Unit in AMR and HCAI, Dept. of Medicine, Imperial College London.

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01

Introduction

THE PROBLEM and RATIONALE for the PROJECT

Antimicrobial resistance (AMR) is recognised as a global problem of high magnitude (WHO 2014). Within the UK, England's Chief Medical Officer has warned of the "catastrophic threat" that this rapid evolution of microbial resistance to antibiotics poses given that the latter are one of the foundations of treatment (and, ironically, prevention) within modern healthcare (Davies 2013). Overuse and inappropriate use of antibiotics are at the heart of the problem. However, a multitude of factors underlie, frame and drive such usage (see Chandler, Hutchinson and Hutchison (2016) for insightful analyses).

As the largest professional healthcare workforce globally, nurses should be able to exert major influence on this issue. Nurses have numerous daily interactions with healthy and ill individuals, family members, community groups and other care professionals. As such, they have many potential opportunities to enact antimicrobial stewardship practices such as education to help lessen inappropriate demand for antibiotics or ensuring that these drugs are prescribed and administered optimally.

However, to date, the profession has not leveraged its full potential to prevent AMR advancing or to countenance the consequences of failure. Survey research in the UK and beyond (e.g. NHS Education for Scotland 2014; Mostaghim et al 2017) indicates that nurses often struggle to substantively develop antimicrobial stewardship (AMS) practices within their roles, with low levels of understanding of AMS, time/workload constraints and ingrained habits and attitudes all cited as impeding factors. Although a number of AMR toolkits have been developed for staff (e.g. Public Health England 2015), many of the AMR initiatives covering nursing so far have had a top-down tendency, in effect telling staff what to do. Our situational analysis suggests a relative lack of engagement with, and ownership of, this imposed agenda i.e. there appears to be a problem around the meaningfulness of the espoused AMR agenda for enactment in practice.

We believe that this is exacerbated by the relative invisibility and abstractness of the AMR risk. AMR can be usefully considered as an ecological issue involving the conjunction of people, places and pathogens. The work of nurses is typically located at this nexus and is manifest in ecologies of practice. While people and places are visible in everyday life, pathogens that may have developed resistance to antibiotics, and that can be a key causative factor in healthcare associated infections (HAIs), are not. Accordingly, it is important to note that AMR and some of its consequences are normally invisible, and this is true generally across everyday work in healthcare settings. Indeed, antibiotics themselves are normally invisible following injection or ingestion. Thus AMR, even in hospital service delivery, can be an abstract concept that contrasts with the many manifest and pressing demands on staff.

Based on our previous HAI focused work around visualisation of people within hospital practice (Iedema, Mesman and Carroll 2013) and visualisation of pathogens in the mind's eye within hospital practice (Macduff et al 2013 ; Macdonald et al 2017), we believe it likely that there is also underlying difficulty in imagining and visualising: (i) everyday practices within settings (i.e. ecologies) that could help prevent AMR, and (ii) the consequences of failure to adequately address AMR in terms of repercussions for the ecologies of practice within which nursing operates.

Accordingly, we have developed RIPEN as an interdisciplinary project based on our belief that involving nurses in the creative co-design of optimal practices and policies can help engender more meaningful engagement with AMR in present practice. Moreover, by using a number of collaborative arts and humanities approaches to do so, we are also seeking to enable nursing's imagination in regards to AMR so that we can collectively re-envisage practice ecologies in future contexts where there may be minimal, or no, effective antibiotics.

RESEARCH QUESTIONS

Given the above aspiration, the overarching question that RIPEN seeks to address is:

How can relevant arts and humanities based approaches help nurses to re-envisage their infection control practice ecologies in response to antimicrobial resistance?

This question is the focus for the current design and methods report.

RIPEN also investigated the following subsidiary questions:

1. How do groups of hospital and community based nurses understand and respond to the priorities and consequences of antimicrobial resistance (AMR) within the context of their everyday working lives?

2. How can co-design and visualisation based approaches help these nurses to identify and construct sets of meaningful practices that optimise present prevention of AMR?

3. How can co-design, visualisation, history and other relevant arts and humanities approaches help nurses to re-imagine and re-envisage their infection control practice ecologies in a future with minimal or no effective antibiotics?

4. What priority issues and other questions does this initial enquiry raise, and how can these best inform policy and planning, education and further research?

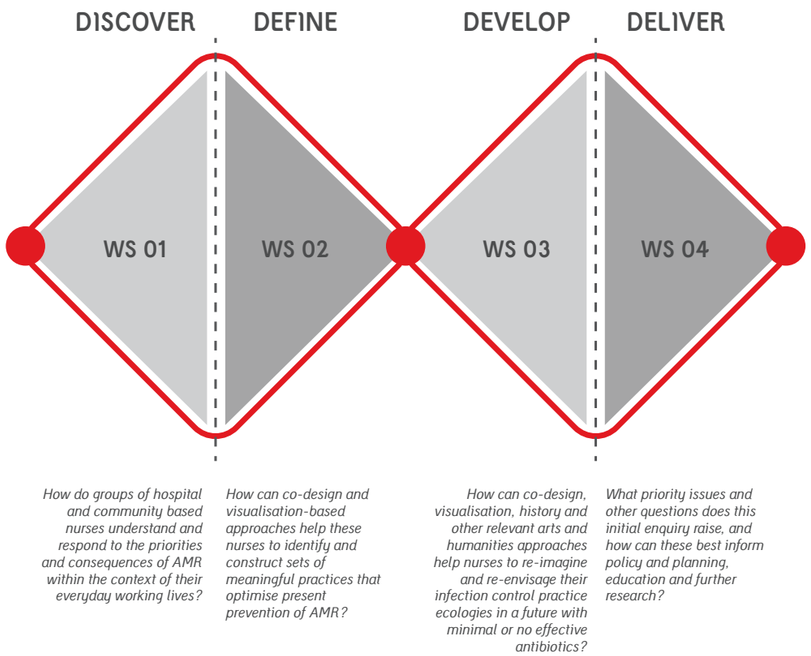
As the current report does not primarily focus on reporting the content generated by project participants, it is concerned more with subsidiary **questions 2 and 3**, rather than 1 and 4.

02

RIPEN Workshops

2.1 APPROACH & METHODOLOGY

The focus of RIPEN was to draw on Arts and Humanities research methods to Re-envision Infection Practice Ecologies in Nursing. Co-design is recognised for its ability to engage users around challenging issues to create shared understandings through implicit knowledge co-creation. In order to deliver this, the work applied the Double Diamond (Design Council 2005) to frame the research and to guide a series of workshops . The research questions and activities of all workshops were aligned to the four encompassing stages of the Double Diamond model. This is shown in the figure below:



The research had a "dual Lab" structure whereby the team's London based researchers (primarily with design backgrounds) worked mainly with community based nurses over the course of a year (London Lab). Concurrently the team's Glasgow based researchers (primarily with nursing and health service research backgrounds) worked mainly with hospital based staff (Glasgow Lab). This afforded opportunities for the Labs to explore the research questions in different ways while collaborating closely to plan and maintain overall continuity of approach.

The aim throughout has been to encourage divergent and convergent thinking through specific activities to explore and inform nursing within the contexts of AMR and IPC. Workshop 1 (WS 01) and Workshop 2 (WS 02) relate to the first two questions which correspond to the 'discover and define' stages of the Double Diamond with Workshop 3 (WS 03) and Workshop 4 (WS 04), and questions three and four linked to the develop and deliver stages.

Between June 2018 and July 2019, 8 workshops were held (4 in London; 4 in Glasgow) involving 18 nurses from a wide range of contexts and roles, along with a junior doctor and a public/patient representative. Each workshop was 4 to 4.5 hours long and involved a collective commitment of 32 "man" hours. In total 256 hours of participation was given to the RIPEN project by the nurses at the two locations, all of which was in their off-duty time.

A final Policy Workshop was delivered at the Royal College of Nursing in London in October 2019. This was attended by 38 participants from clinical practice (including London and Glasgow Lab participants), policy making, management, education, research and relevant charities. Working from the accumulated developments of the previous workshops, this event identified priority areas of nursing and AMR as a basis for stakeholders exploring how these could be translated into meaningful policy.

In addition, three Advisory Board meetings were held to input on the workshops and to provide feedback on the outcomes and findings. The Advisory Board members (see *Acknowledgements* section) were a panel of experts from nursing, IPC, and the arts and humanities. The first Advisory Board meeting was held in London in April 2018 with the second in Glasgow in December with the final one held in London in June 2019.

Finally, to consolidate the learning six months after the last Glasgow and London workshops, feedback was sought from the participants on their reflections on the methods and any impacts that may have arisen through their engagement with RIPEN.

2.2 LONDON & GLASGOW WORKSHOPS

The next pages present the the eight workshops conducted in London and Glasgow.

The rationale and objectives of each of the workshops is explained; the activities carried out are described, and some selected methods and tools are shown, along with reflections taken from the participants' feedback forms, and the researchers' field notes.

Clear alignments regarding the overarching methodological approach between the two Labs can be indentified. Conversely, some activities, methods and tools differ significantly as the Labs responded and adapted the workshops to follow the dynamic development of the participants and the outcomes of their collaborative work.

WORKSHOP **01 | London**

Visualising Narratives around AMR / IPC from a Personal and Professional Perspective

RATIONALE

To use creative, co-design methods to elicit participants' understandings of, and responses to, the priorities and consequences of AMR within their everyday working and personal lives.

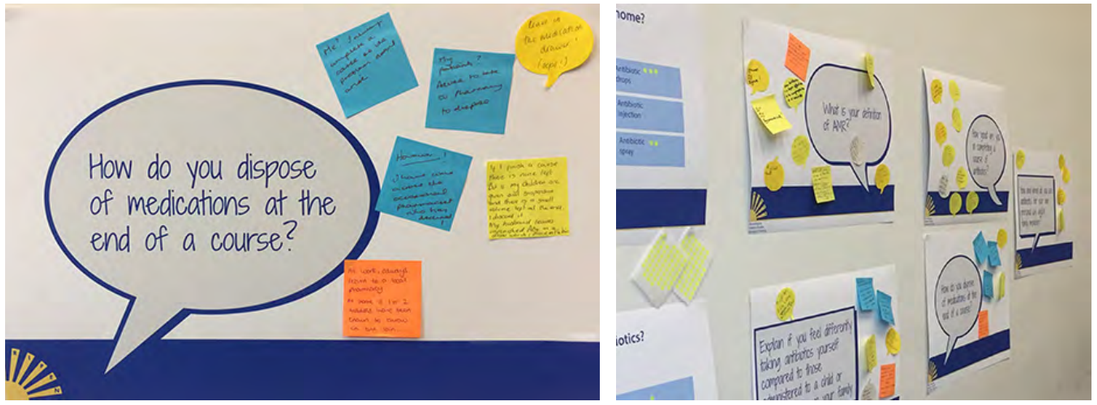
OBJECTIVES

> Collect your initial thoughts on how antimicrobial resistance and antibiotics impact on your daily life outside the work setting and your definition of AMR;
> Gain insights into the main activities and contexts which make up your typical working day;
> Understand your perspective of infection and AMR hotspots;
> Identify how infection and AMR practices feature in your daily routine;
> Gather your opinion on the cause and effect of infection and AMR practices.

ACTIVITIES

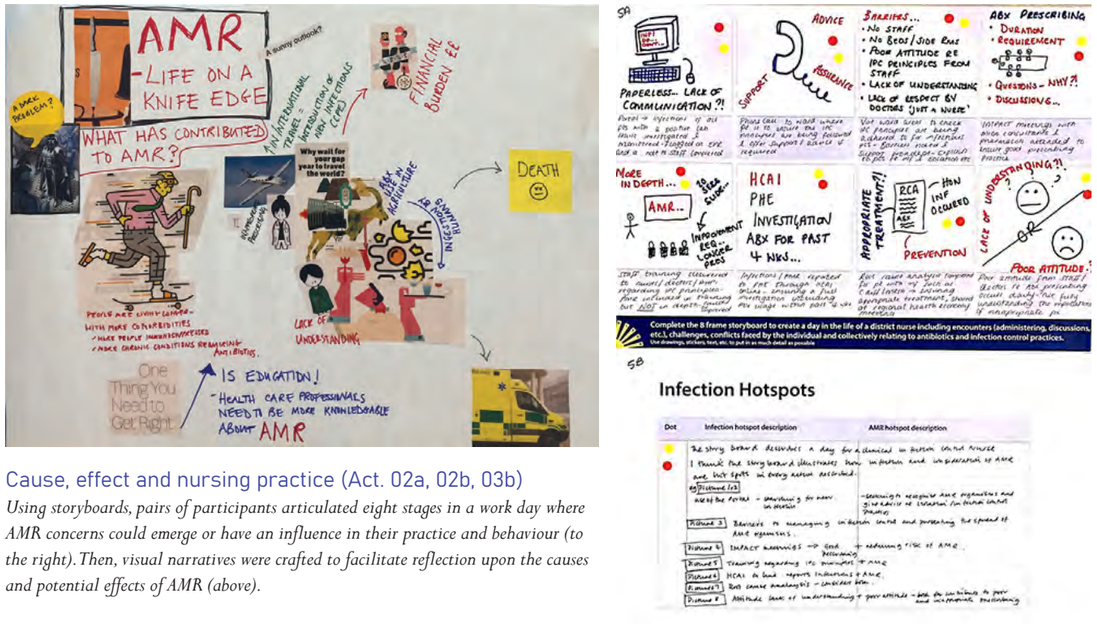
ACT 01: **Quick fire questions** *Using prompt questions to get a snapshot of how the participants see and use antibiotics in their everyday lives, within and outside the work setting.*	30 min., individual
ACT 02a: **My role and routine** *Participants complete the 8-box storyboard template to represent a day in the life of a district nurse including encounters relating to antibiotics and infection control practices.*	45 min., in pairs
ACT 02b: **Infection hotspots on the storyboard** *Using red stickers, participants will highlight in their storyboards where they encounter particular AMR and IPC practices. Then, they will provide an explanation for their choices.*	30 min., in pairs
ACT 03a: **AMR as a concern in your daily practices** *In pairs, participants will place a marker on a spectrum of high concern to low concern, providing the rationale for the positioning of each AMR-, IPC-related issue.*	30 min., in pairs
ACT 03b: **Cause and effect of AMR** *Participants are asked to create a visual narrative (comprising six steps) around the cause and effect of AMR, using text and images (collage, drawings, diagrams etc.).*	30 min., groups
ACT 04: **Have I Got Infection Control News for You?** *Encouraging people to complete the missing words on provocative newspaper headlines.*	20 min., groups
FINAL: **Facilitated group discussion and evaluation of works**	30 min., groups

METHODS & TOOLS



Reflecting on the use of antibiotics (Abx) to establish shared-ground (Act. 01)

The initial activity of the first workshop focused on establishing shared-ground between participants who were brought together to work in collaboration for the first time. This has been facilitated through the use of prompt questions looking into the use and disposal of antibiotics within the personal and professional lives of participants, and their knowledge of AMR.



Cause, effect and nursing practice (Act. 02a, 02b, 03b)

Using storyboards, pairs of participants articulated eight stages in a work day where AMR concerns could emerge or have an influence in their practice and behaviour (to the right). Then, visual narratives were crafted to facilitate reflection upon the causes and potential effects of AMR (above).

REFLECTIONS

Participants' feedback:

"The poster / collage allowed reflection on cause and effect with good discussions."

"I found it valuabe hearing about other participants' practices and what is most challenging for them."

Researchers' notes:

> Utilising a variety of narrative-based visualisation methods has facilitated a lively process of surfacing and sharing participants' embedded knowledge and lived experiences.

WORKSHOP **01 | Glasgow**

Eliciting understandings of, and responses to, the priorities and consequences of AMR within everyday working and personal life

RATIONALE

The workshop aims to discover how participants conceptualise AMR and experience its manifestations and meanings in everyday practice. Creative, co-design methods are used so as to build from where staff are rather than impose a pre-conceived AMR agenda.

OBJECTIVES

> Collect participants' initial thoughts on the meaning that antibiotics have within their personal life and professional working life;
> Explore how participants picture AMR/aspects of AMR in their minds;
> Gain insights into the main activities and contexts which make up a typical working day, focusing on the main "touchpoints" for AMR, IPC or both;
> Gain insights into the extent to which participants differentiate AMR from IPC work and what thinking informs this;
> Gain insights into which aspects of this work are individually and/or collectively enacted, and any related prioritisation within work routines.

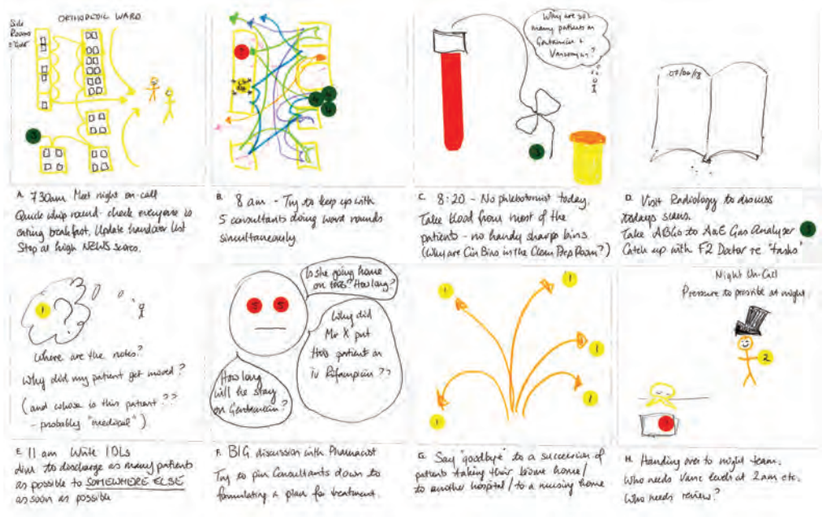
ACTIVITIES

ACT 00: **Preparatory work before workshop** *Responding to an e mail invite, participants send in thoughts on the meaning antibiotics have for them.*	30 min., individual
ACT 01: **Introduction to the project and workshop 1** *After introductions, the team feedback collated thoughts from the prep work and initiate group discussion of the meaning of antibiotics in home and work life.*	25 min., whole group
ACT 02: **Drawing AMR** *Each participant depicts AMR then pairs interview each other about the images, eliciting what is represented and why that content and form.*	30 min., individual, pairs
ACT 03: **Storyboarding daily contexts and activities** *Each participant completes an 8 frame storyboard depicting a typical work day, adding in coloured dot stickers to indicate touchpoints for AMR, IPC or both.*	40 min., individual
ACT 04: **"On the spot": interview for AMR/IPC insights** *Pairs interview each other re the storyboards' narratives and most meaningful frames re AMR and IPC. Eliciting what is going on, who is involved, why it is happening, and why it is AMR, IPC or both.*	30 min., pairs
ACT 05: **Further understanding enactment in context** *Participants number each dot (1-5) to indicate the priority each AMR/IPC activity is typically given in relation to other work, differentiating self and team if apt. Recorded group discussions of ratings to understand where, when, how and why.*	40 min., individual, small groups
FINAL: **Closing remarks, next steps, participant feedback on activities**	15 min., whole group, individual

OBS: Activities 02, 04 and 05: interviews/discussions are audio recorded.

METHODS & TOOLS

(Act. 02)
Three nurses' different depictions of AMR, highlighting feelings and using metaphor to convey conflictions around AMR.



(Act. 03, 04, 05)
A junior doctor's ward-based storyboard where red dot touchpoints = AMR only, green= IPC only, and yellow = both AMR and IPC. Numbering on dots goes from 1 (consistently given very low priority) to 5 (consistently given very high priority).

REFLECTIONS

Participants' feedback:

"Good exercise for focusing your mind on the topic"
" More difficult if not graphically/artistically gifted!"
(Re Act. 02)
"Using the stickers provided the opportunity to reflect on perceptions of AMR. My group facilitated an insightful discussion"
(Re Act. 03, 04, 05)

Researchers' notes:

> The drawing AMR activity yielded a range of images which triggered useful initial discussions. Concerns about drawing skills were less of an issue than anticipated. Acts. 03-05 yielded really rich insights. One participant helpfully suggested distinguishing self and team prioritising of actions. We felt quite pressured for time on the day.

WORKSHOP **02** | London

Defining Individual and Collective Priorities to Think About Solutions for AMR and the Role of Nurses

RATIONALE

Building from the results of Workshop 1, participants will use creative, co-design methods to support the development of intervention ideas to address some pressing AMR issues, previously identified by the group. This workshop aims at highlighting the roles played by nurses in the development, enactment and implementation of interventions.

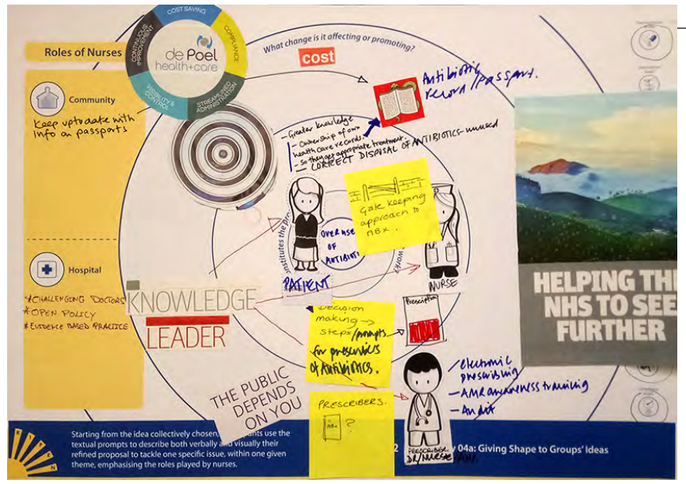
OBJECTIVES

> Discuss different approaches to solving AMR-related issues, according to individual and collective points of view;
> Support the participatory development of interventions ideas around previously identified AMR issues;
> Explore the ways in which interventions could be materialised in relation to four specific modes of delivery: policymaking; social prescription; technology-based; and education/training;
> Facilitate the establishment of agreed-upon priorities of action, considering the different roles of nurses within the community and the hospital environments.

ACTIVITIES

ACT 00: **Themes and issues > Intervention ideas > Role of nurses** *Working from a template, sent via email, participants start identifying areas and themes of priority to nurses and how they initially envision changes to their practice.*	15 min., individual
ACT 01: **Introduction to Workshop 02** *Team delivers a brief presentation in order to bring participants back to the project via establishing a shared platform regarding timeline, objectives, information and plans.*	10 min.
ACT 02: **Initial intervention ideas presentation** *Each participant presents their individual work, giving other participants an opportunity for to learn about the proposals their colleagues have come up with.*	30 min., individual
ACT 03: **Prioritise (and rationale for choice)** *Groups determine which issues and ideas individually developed seem more relevant or urgent and why, according to their shared perspective.*	30 min., groups
ACT 04a: **Giving shape to the groups' ideas** *One intervention solution per group will be developed and described, based on the prompting questions to provide a common basis for inter-group comparison/complement and critique.*	40 min., groups
ACT 04b: **Provocation** *Groups explore how interventions manifest differently when considering specific means to support the enactment or implementation of the interventions.*	30 min., groups
ACT 05: **Feedback and reflection, plus prioritising of final ideas** *All participants discuss the ideas proposed by each group to select the top-2 intervention proposals that seem more relevant or urgent (and why).*	30 min., one big group
FINAL: **Closing remarks, next steps, participants' feedback**	15 min., one big group

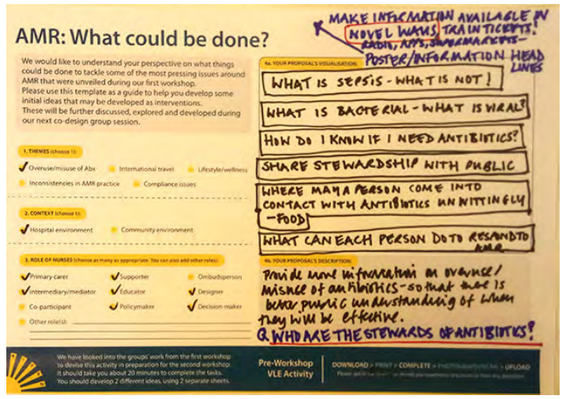
METHODS & TOOLS



Activity 04a: **Giving Shape to the Groups' Ideas**

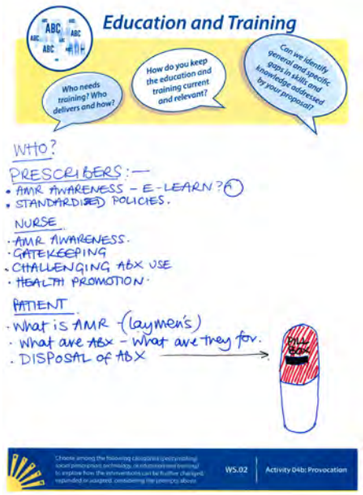
Solutions from a group's perspective

Groups articulate an initial intervention idea, based on discussions about overuse of antibiotics, and the roles of nurses (in hospital and/or community care).



Solutions from an individual perspective (Act. 00)

Before coming to the workshop, each participant utilised this template to reflect on priority areas (themes identified from work done in Workshop 01), contexts of care, and the roles of nurses, to sketch a proposal for how to tackle AMR.



Considering the educational dimension (Act. 04b)

Groups were invite to consider changes to their ideas within four thematic areas: education and training (above), technology development, social prescription, and policymaking.

REFLECTIONS

Participants' feedback:

"I think talking about it [nurses' role in tackling AMR] *in this forum just made me focus on the challenges in my setting."*

"Coming up with interventions highlighted some issues I had not considered."

Researchers' notes:

> Observed inconsistencies in the approach and results achieved by participants in the pre-workshop activity impacted initial work;
> Consider prototyping activities in future workshops to further reflect on the challenges of current practice and the potential of initial ideas.

WORKSHOP **02 | Glasgow**

***A Meaningful Repetoire for AMR**: identifying and developing sets of practices for optimal prevention and control*

RATIONALE

The workshop aims to build from Workshop 1 so that participants can consider which practices it would make sense to develop/adopt and then creatively co-design how to do this (i.e. define practices themselves rather than receive an implementation list).

OBJECTIVES

> Compare current AMR-related practices with good practice guidance;
> Individually identify particular areas of practice of most importance for meaningful development;
> Gauge gaps between current enaction of these and ideal practice;
> Prioritise from this basis where best to invest time and energy;
> Depict these considerations as a basis for collaborative exploration of how to progress these practices;
> Share and record insights arising during the above processes.

ACTIVITIES

ACT 00: **Preparatory work before workshop** *Participants are sent compilation of Workshop 01 storyboards so they can consider similarities and differences.*	60 min., individual
ACT 01: **Our practices: reviewing storyboards** *Open group discussion of Workshop 1 storyboards leading to summary of AMR/IPC practice issues.*	30 min., whole group
ACT 02: **RIPEN roulette: good practice guidance** *Each participant is dealt 3 "good practice cards"; a hand gel bottle is spun; participant selects card to discuss; group compares enacted and espoused practices.*	30 min., small groups
ACT 03: **AMR Participant Generated Index (PGI)** *Participants use this tool to (i) identify 5 practice areas to develop- can relate to self or team, (ii) score current practice (1-10), and (iii) weight priorities for action.*	30 min., individual
ACT 04: **PGI: what and why?** *Pairs interview each other: why these 5 areas? tell me about your ratings of current practice? what made you put more emphasis on improving area X?*	30 min., pairs
ACT 05: **The AMR Magnifier** *Participants map PGI areas and ratings onto a pie chart "Magnifier"; thoughts re the who, where, how of actions to develop each area (slice) are added. Then pairs exchange ideas for developing each Magnifiers' agenda.*	60 min., individual, pairs
FINAL: **Closing remarks, next steps, participant feedback on activities**	15 min., whole group, individual

OBS: Activities 01, 02, 04 and 05: interviews/discussions are audio recorded.

METHODS & TOOLS

(Act. 02)
Cards with recommended AMR nursing practices (total of 15 statements synthesized from RCN; HIS/SAPG; HAI Standards).

(Act. 03, 04, 05)
Participant Generated Index (foreground; adapted from Ruta et al's, 1994, work) being visualized as a "Magnifier" (centre).

REFLECTIONS

Participants' feedback:

"Focused thinking on priorities within AMR"
(Re Act. 03)
"Helped to think deeply about my practice and identify issues"
"I found this the most useful tool"
(Re Act. 05)

Researchers' notes:

> This workshop worked well in yielding a range of very insightful ideas, interactions and related visual and recorded data. The use of rating and weighting scales was a means to the end of in-depth considerations and conversations. The downside was that this all took time and in-depth coverage of how to develop the practices was limited at the end.

WORKSHOP **03 | London**

Historical Reflections and Future Projections on AMR/IPC Nursing Practice

RATIONALE

To reflect upon how various artefacts, standards, and practices have contributed to past and present changes to nursing practice. To, then, look at how these can further contribute to changes to the profession in a future with minimal or no effective antibiotics. The workshop aims at exploring how these issues manifest across different levels of change.

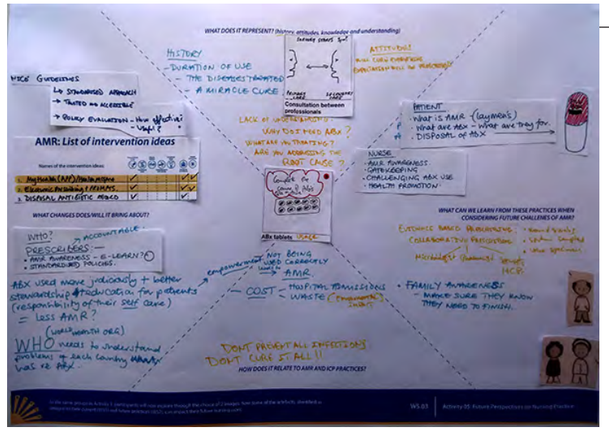
OBJECTIVES

> Elicit reflection on how artefacts, standards and innovations have impacted and changed past nursing practices (focusing on AMR/IPC);
> Explore how some selected historical artefacts and innovations contributed to determine the expectations and aspirations of nursing practice in the past;
> Explore how some current artefacts and innovations contribute to the nursing practice of today and how some imagined artefacts and innovations can contribute to the nursing practice in a future with limited availability of effective antibiotics;
> Reflect on how innovations across different levels of change interact to facilitate meaningful improvements to the nursing profession in the past, present and, particularly, in a future with limited availability of effective antibiotics.

ACTIVITIES

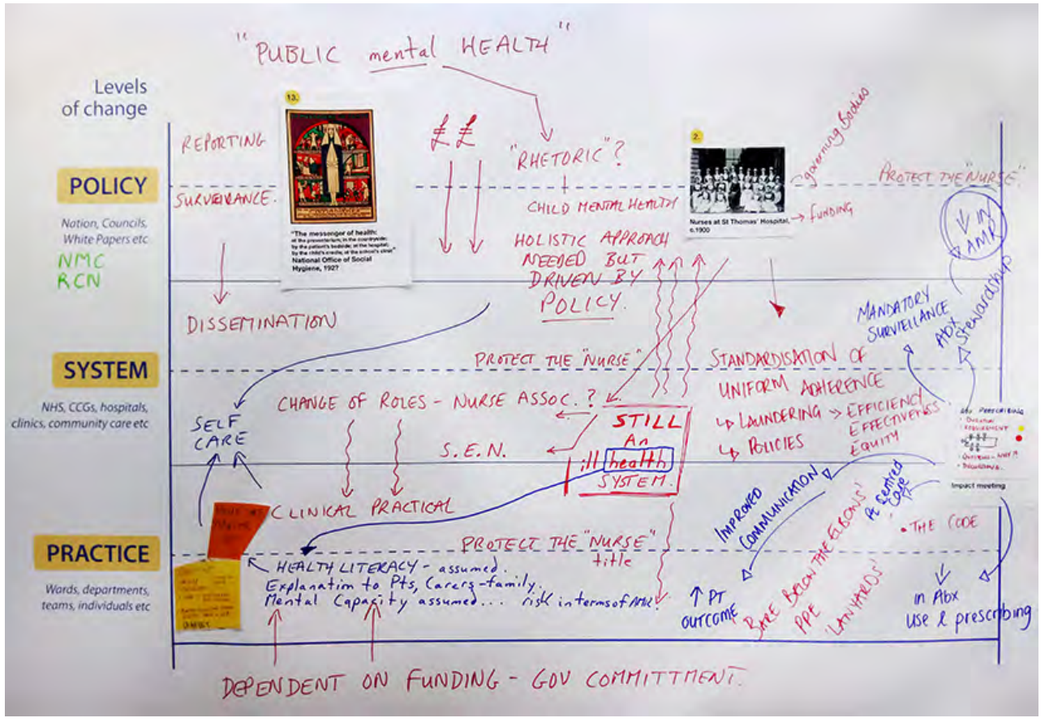
ACT 00: **The past of nursing practice and AMR/IPC** *Participants choose 2-3 images from a selection hosted on the project's website to reflect on how artefacts, standards and innovations have impacted and changed past nursing practices.*	20 min., individual
ACT 01: **Mapping of selected images** *Each participant will use stickers to signal the images they have chosen in a mosaic hung on the wall. Participants draw lines connecting the images they have chosen using markers.*	10 min., whole group
ACT 02: **Rationale for choice, and reflections** *To get a sense of how participants see artefacts and other innovations affecting/changing past and present nurse practice, each will take turns to talk about their choice of images.*	30 min., individual, whole group
ACT 03: **Historical perspectives on nursing practice** *Participants are divided in groups of 2 or 3 people to further explore how the selected historical artefacts and innovations have contributed to determine the expectations and aspirations of nursing practice (with a focus on AMR/IPC).*	40 min., groups
ACT 04: **Looking back at the levels of change in practice** *Participants plot historical artefacts and innovations onto a big map divided in three levels: policy/system/practice; to, then, reflect on how these levels interact to facilitate meaningful changes to the nursing profession in the past.*	30 min., groups
ACT 05: **Future perspectives on nursing practice** *Participants use templates to explore the context and use of certain artefacts, standards, practices, and professional relationships concerning present and future nursing practice.*	30 min., groups
ACT 06: **Looking forwards to the levels of change in practice** *Participants plot the artefacts they have analysed in Act.05 in the same template of Act.04.*	30 min., groups
FINAL: **Closing remarks, next steps, participants' feedback**	15 min., one big group

METHODS & TOOLS



Activity 05: **Future perspectives on nursing practice**

(Act. 04, 06)
Mapping of past, present and future AMR/IPC nursing practicess according to three levels of care: policy, system, and practice.



REFLECTIONS

Participants' feedback:

"Change processes > allowed clinical exertise/thought processes to be explored/developed."

"I think it was very helpful to be able to look back and reflect. I see how previous workshops and ideas fed through the whole experience."

Researchers' notes:

> Alternating the focus between past, current and future practice, the activities promoted deep reflection, and helped participants to map both problems and solutions in relation to the three levels of change.

WORKSHOP **03 | Glasgow**

Prototyping policy proposals from prioritised practices

RATIONALE

The workshop aims to build from Workshop 2 so that groups of participants can jointly identify prioritised areas of practice that need policy action at local, national and/or international levels. Relevant policy proposals are then developed and discussed.

OBJECTIVES

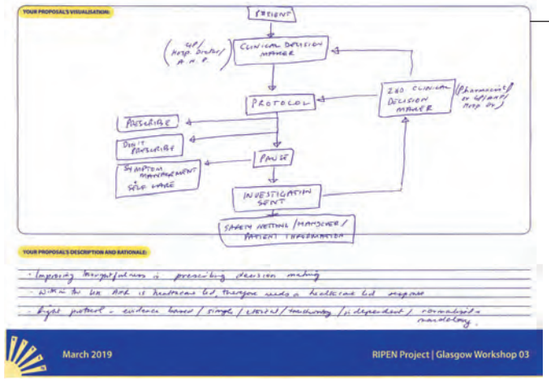
> Review practices that individual participants prioritised for action;
> Agree on areas of practice to develop as policy proposals;
> Use ideas from Kingdon's Policy Windows Model to structure and develop proposals;
> Present and critique emergent prototype proposals;
> Share and record insights arising during the above processes.

ACTIVITIES

ACT 00: **Preparatory work before workshop** *Participants read "Changing how we think about healthcare improvement" article and share examples from own experiences.*	60 min., individual
ACT 01: **Meaningful Magnifiers** *Each participant explains key aspects from their displayed Magnifier to the whole group and emergent ideas are discussed.*	30 min., whole group
ACT 02: **Selecting and sketching proposal ideas** *Participants with shared areas for priority form small groups and start to sketch out related policy ideas using Template 1.*	30 min., small groups
ACT 03: **Structuring ideas: policy and practice windows** *Facilitator explains key ideas from Kingdon's Model (alignment, entrepeneurs, politics, policy) and related poster (Template 2).*	15 min., research team
ACT 04: **Policy Entrepreneurs: developing proposals** *The small groups use the poster template to articulate how their proposal will consider politics, policy, and other influences (at macro, meso, micro and/or nano levels) so as to align actions that can "open windows" for change in policy and practice.*	60 min., small groups
ACT 05: **Prototyping through presentations** *Each small group in turn displays their poster and explains it to the whole group who ask questions, offer constructive critique, and ideas for further development.*	45 min., small groups, whole group
FINAL: **Closing remarks, next steps, participant feedback on activities**	15 min., whole group, individual

OBS: Activities 01 and 05: discussions are audio recorded.

METHODS & TOOLS



Activity 02: **Sketch of Prescribing Pause Proposal (using Template 1)**

(Act. 04)
Developing a proposal using Policy Poster (Template 2).

REFLECTIONS

Participants' feedback:

"I think the Workshop 03 activity (a large diagram which brought together different aspects of the problem) was useful. However, it was more the process of group discussion that followed each activity that I found very useful."
(Re Act. 04)

Researchers' notes:

>This workshop was productive in moving forward from individual practice priorities to four different group proposals. The development of a template based on Kingdon's ideas proved valuable in providing a structure that participants could use within a short timeframe. As noted above, however, the poster presentation and feedback activity seemed particularly useful in yielding insights and ideas for further developments..

WORKSHOP **04 | London**

Translating Process and Practice Into Policy on AMR and IPC

RATIONALE

Working from the lessons learnt and the accumulated developments of all previous workshops, we will use a variety of creative and analytical methods to identify priority areas, targeted at diverse groups of stakeholders across the healthcare service environment. We will also propose improvements, thinking about how to assess and evaluate change, as well as how to design and enact policies focused on improving nursing practices, education and future AMR/ICP research.

OBJECTIVES

> Select individual and group priority areas for policy change and action, looking into the future roles and practices of nurses concerning AMR/ICP within a context with limited effective antibiotics;
> Identify key stakeholders within a comprehensive landscape of healthcare service provision (government agencies, politicians, practitioners, members of the public etc.);
> Outline the specifics of what changes need to be implemented, along with clear guidelines for assessing key indicators of change;
> Identify what is needed to be done by whom in order to enable policies to become effective;
> Design policy pathways to enable future actions concerning the demands, opportunities, roles and responsibilities of nurses and other stakeholders in order to improve AMR/ICP practice, and the quality of the healthcare services provided to patients;
> Draft statements that communicate the policy pathways to their specific audiences.

ACTIVITIES

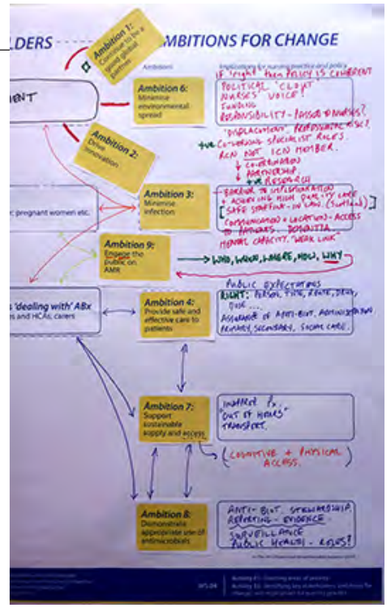
ACT 01: **Selecting areas of priority** *From a selected list (taken from previous workshops' activities), participants select and cut - first individually then in groups - the priority areas to focus on.*	20 min., individual, groups
ACT 02: **Identifying key stakeholders and ambitions for change** *Participants identify the main stakeholders affected or involved,within a comprehensive landscape of healthcare service provision. The groups pair their chosen priorities and stakeholders to ambitions set by the UK government in its plan to tackle AMR.*	30 min., groups
ACT 03: **Making and assessing change** *Groups should then think of innovations and how change will be assessed, considering: What needs to change? How does change look like? What are the key indicators of change?*	30 min., groups
ACT 04: **Enabling changes to become effective** *Once the group determines the nature, shape and form of change (and how changes will be evaluated), participants should consider: Who needs to do what? What other provisions and resources are required?*	25 min., groups
ACT 05: **Designing policy pathways** *Groups design a Policy Pathway by combining areas of priority and key stakeholders, ambitions for change, innovations and evaluation, and necessary enablers.*	40 min., groups
ACT 06: **Writing policy statements** *Groups draft a Policy Statement for a time when the use of antibiotics would have limited or no effect. The statement should account for an overarching approach to action and change.*	25 min., groups
FINAL: **Discussion, closing remarks, participants' feedback**	25 min., one big group

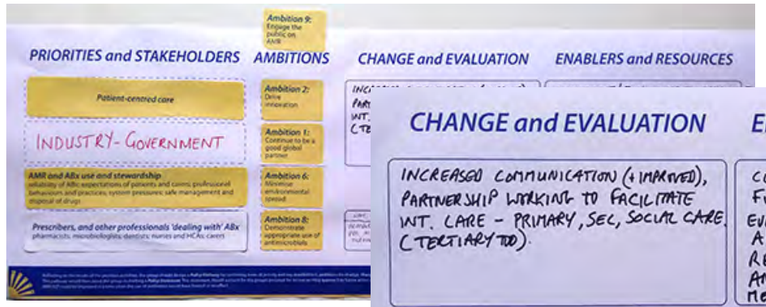
METHODS & TOOLS

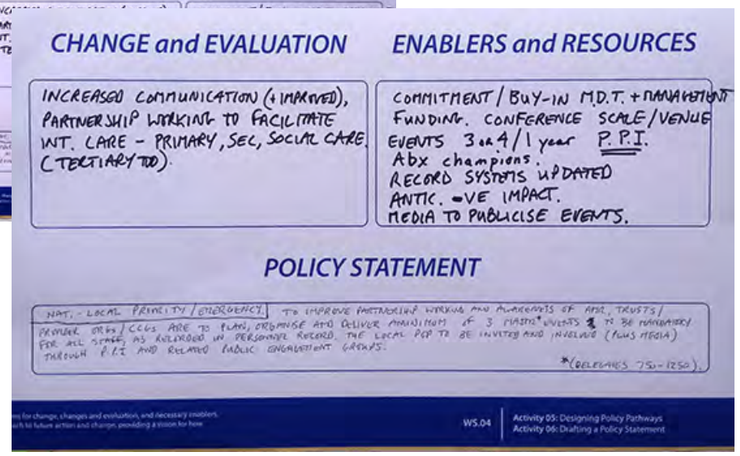
Activity 02 (detail): **Identifying key stakeholders and ambitions for change (with implications for nursing practice)**

Participants at work

During the forth workshop, participants were required to creativeky articulate large amounts of data stemming from their previous work and relevant literature.







(Act. 05, 06)

Mapping of past, present and future AMR/IPC nursing practicess according to three levels of care: policy, system, and practice.

REFLECTIONS

Participants' feedback:

"The whole process has identified how nurses can and do have a key role in AMR/ICP change."

"A 'bottom-up' approach to AMR policy making surely is best! We have a wealth of knowledge and who knows how many combined years in nursing! It makes sense we should have the answers."

Researchers' notes:

> The workshop flow was very dynamic. Activities were executed with complete creative autonomy, demonstrating the familiarity with which participants used the custom-made tools, designed in response to the developments of all the previous workshops.

WORKSHOP **04 | Glasgow**

Using arts and humanities-based approaches to re-envisage infection control practice ecologies in a future with minimal or no effective antibiotics

RATIONALE

The workshop engages participants with the lens of history to analyse how and why infection practice ecologies have changed. This provides a basis from which to re-envisage practices so that optimal nursing could be delivered in 2030 and beyond.

OBJECTIVES

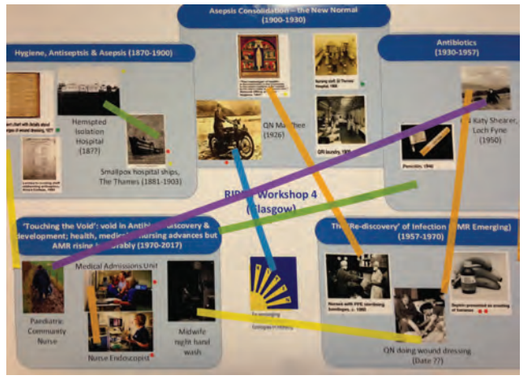
> Engage with a range of historical images and future projections about AMR;
> Map and analyse significant historical images and identify useful learning;
> Project pictures of practice in 2030 when there may be minimal effective antibiotics;
> Synthesize lessons for re-envisaging practice and current actions needed;
> Share and record insights arising during the above processes.

ACTIVITIES

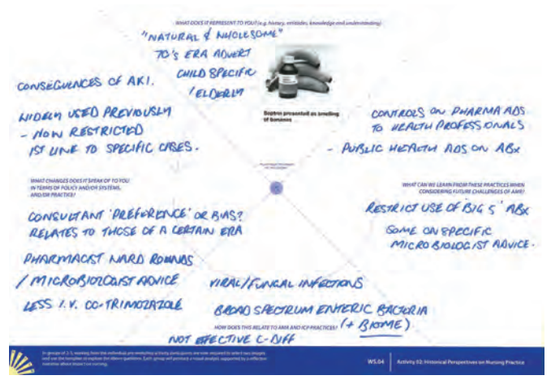
ACT 00: **Preparatory work before workshop** *Participants engage with a set of 17 historical images and other resources for envisaging AMR futures (radio, film, novels).*	60 min., individual
ACT 01: **Mapping of significant images** *Each participant selects two of the 17 images (displayed on Template 1), explains significance and highlights interconnections. The resultant visualization provides focus for initial discussions.*	30 min., individual, whole group
ACT 02: **Analysis of selected images** *Pairs/trios use Template 2 to structure analysis of two images in terms of meaning, change, AMR/IPC, and implications for 2030.*	40 min., pairs/trios
ACT 03: **Re-envisaging IPC ecologies: a 2030 storyboard** *Participants create an updated personal storyboard imagining a typical working day in 2030, assuming further advance of AMR.*	40 min., individual
ACT 04: **Projections and reflections** *Participants explain key aspects of their 2030 storyboards, indicating differences and similarities with their 2018 storyboards.*	40 min., whole group
ACT 05: **Envisaging and Re-envisaging IPC ecologies** *In a final discussion participants summarise the learning accrued and draw out the implications for delivering optimal nursing.*	30 min., whole group
FINAL: **Closing remarks, next steps, participant feedback on activities**	15 min., whole group, individual

OBS: Activities 01, 02, 04 and 05: discussions are audio recorded.
NB. With consent, Workshop 04 was filmed (see https://vimeo.com/368059130).

METHODS & TOOLS



(Act. 01)
Mapping of images and connections (Template 1).



(Act. 02)
Analysing an image of Septrin and bananas using Template 2.

Activity 03: **Storyboard from an IPC nurse projecting practice in 2030**

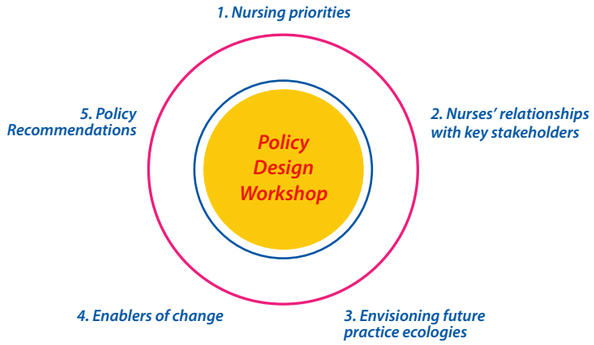
REFLECTIONS

Participants' feedback:

"I did find drawing a hospital of the future crystallised my thoughts, especially on the difference between ordinary dirt and contamination by a specific microbe, and the importance of a healthy biome as protection against pathogens."
(Re Act. 03)

Researchers' notes:

> All activities worked well, particularly the projections then reflections session.



2.3 POLICY WORKSHOP

The policy workshop took place at the Royal College of Nursing in October 2019. In all 38 stakeholders from a range of health and AMR related professions participated – including microbiologists, public health specialists, doctors, nurses and academics.
In all five activities were created to take the participants through a policy pathway process. The participants were grouped in to 7 teams of 5 to 6 participants. All the activities were located on a policy process map to align the thinking for the workshop outputs.

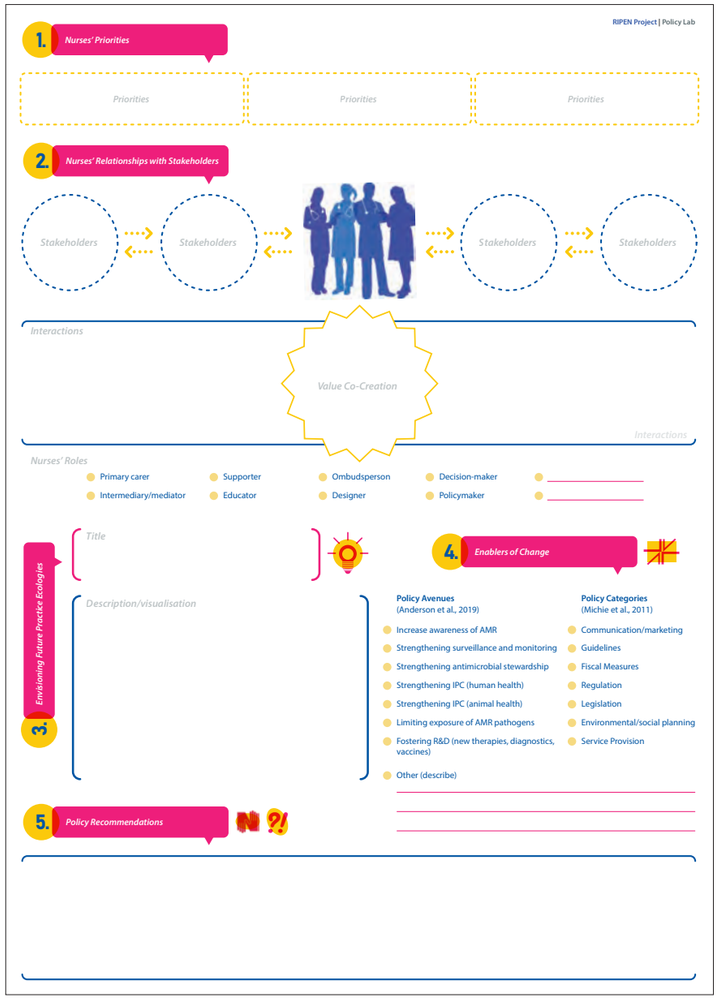
Divided into two halves, the first three workshop activities focused on AMR and priority areas for nurses, the relationship with different stakeholders and the co-creation of value through their engagement with the identified stakeholders. This first set of activities were then used to inform the second part of the workshop that focused on the future role of nurses and AMR, and how these may be translated in to policy to deliver the priorities. The following provides bullet points of what was required of each activity.

SUPPORTING POLICY CHANGE

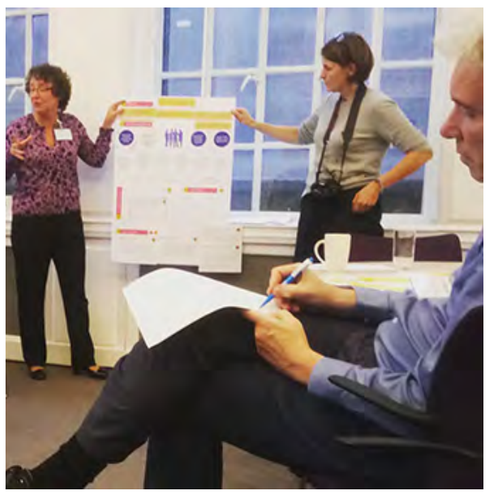
The approach of using design methods for the development of policy acknowledges the role that Arts and Humanities can play in involving a broad range of people in complex issues such as AMR whilst also recognising its contribution to the social interactions involved in designing for a shared endeavour. Referencing back to use of the Double Diamond used to frame the RIPEN approach, again we can see in this fifth workshop, how the following co-design activities move from discovering priorities and relationships through to generating new futures and prototyping how that may be delivered through policy.

A cycle of policy change was conceived, accounting for five main activities (see figure above): *1. Nursing priorities; 2. Nurses' relationships with key stakeholders; 3. Envisioning future practice ecologies; 4. Enablers of change; and 5. Policy recommendations.*

See: http://www.ripen.org.uk/outputs.html for additional materials, including a briefing paper distributed to all participants prior/during the workshop event; a summary of the analysis process; and a policy flyer, used by Rose Gallagher, RCN Professional Lead for Infection Prevention and Control, in her presentation at the 2020 Westminster Health Forum Policy Conference on AMR. All materials are available for free download.



Policy workshop poster template
The structure and sequence of activities were based on RIPEN's Arts & Humanities approach to designing new AMR nursing policy, emerging from the lessons learnt throughout the project, and focused on the specific objectives of the workshop.



Codesigning with a wealth of invested stakeholders
The RIPEN policy workshop took place at the headquarters of the Royal College of Nursing, in London, gathering close to 40 particiapants among nurses, physicians, academics, practitioners, patient representatives, and people involved in various levels of policymaking.

Policy WORKSHOP | RCN Headquarters, London

Informing policy on AMR through Arts and Humanities & Practices

RATIONALE

Working from the accumulated developments of all previous RIPEN workshops (Glasgow and London), we will use a variety of creative and analytical methods to engage and identify priority areas of nursing and AMR and link these to a diverse group of stakeholders across the healthcare service environment. We will reflect on the interactions of the selected stakeholders with nurses and identify the co-creation of value, to inform the thinking on the future role of nurses and AMR and how this may be translated into policy.

OBJECTIVES

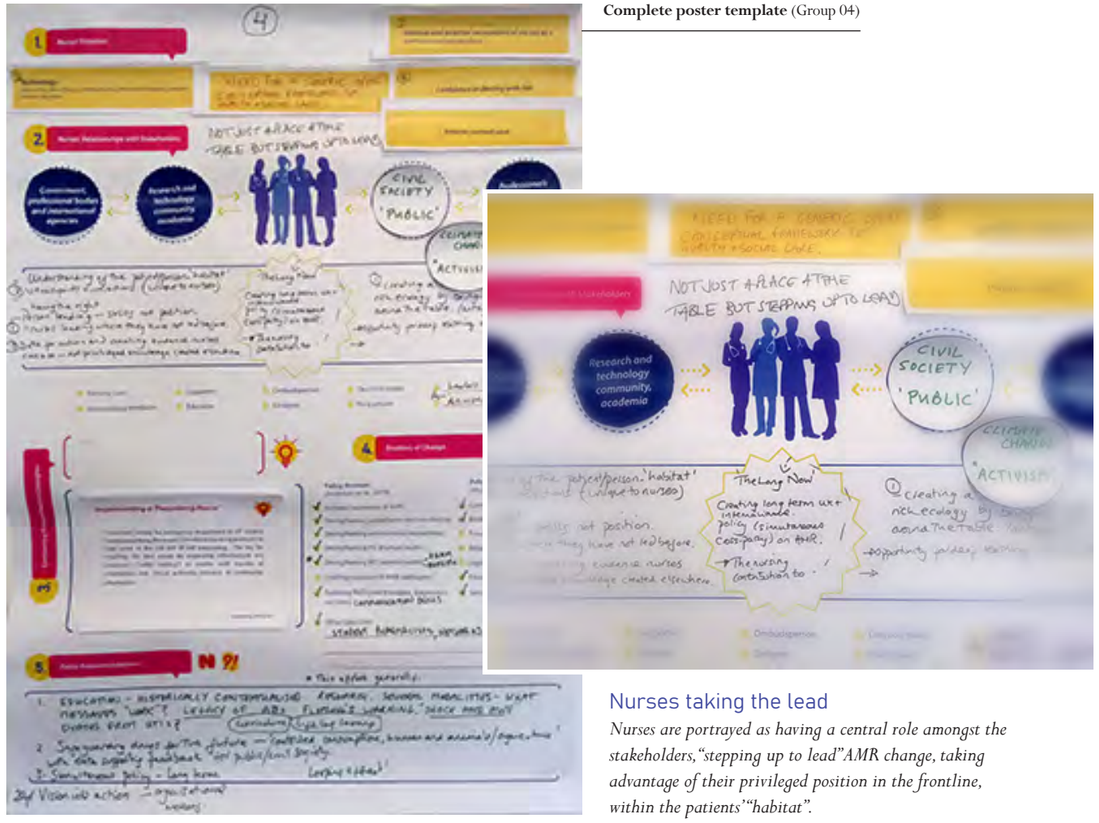
> Identify nurses' priorities, key stakeholders, current and emerging nurses' roles involved in AMR/IPC;
> Analyse and further develop ideas, building from the interventions proposed by RIPEN participants in the eight previous workshops;
> Reflect on broader implications to AMR nursing practice, and how the workshop outcomes can lead to policy recommendations, in light of RCN's evolving position on tackling AMR.

ACTIVITIES

ACT 01: **Selecting areas of priority for nurses** *Drawing from their own experiences in healthcare and from the priorities identified through the work of RIPEN, participants select two to three priority areas to focus on.*	20 min., groups
ACT 02: **Identifying nurses' relationships with key stakeholders** *Participants identify the main stakeholders affected or involved, considering the selected priorities within a comprehensive landscape of healthcare service provision. Groups understand the nature of relationships, identifying co-created values from the interactions.*	30 min., groups
ACT 03: **Envisioning, making and assessing change** *The groups will critically assess gaps and opportunities concerning AMR/IPC practice to foster empowerment and activism of nurses, their agency and roles played in the process of envisioning and making future change.*	40 min., groups
ACT 04: **Enabling changes to become effective** *Participants should consider what strategies may promote the enablement of the proposed changes, while considering the parameters and key indicators used to determine whether changes/improvements will be achieved.*	40 min., groups
ACT 05: **Designing policy recommendations** *The groups then draft policy recommendations, accounting for both the higher-level strategy (policy statement) and the tactical aspects of translating policy to practice (action plans).*	40 min., groups
ACT 05b: **Reflecting on some key issues emerging from RIPEN's work** *The groups reflect on their policy recommendations taking into account the 'reflective questions' emerging from RIPEN's work, using the summary cards provided.*	30 min., groups
FINAL: **Group discussion, closing remarks, participants' feedback** *Each group presents the result of their work, using the posters produced as a reference to illustrate their process, choices and developments.*	15 min., whole group, individual

METHODS & TOOLS

Complete poster template (Group 04)

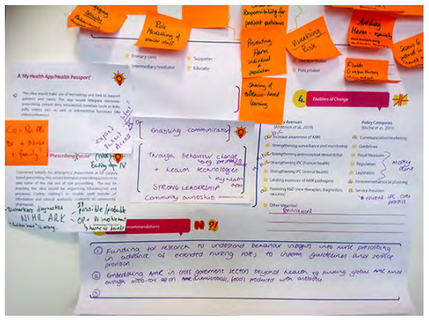


Nurses taking the lead

Nurses are portrayed as having a central role amongst the stakeholders, "stepping up to lead" AMR change, taking advantage of their privileged position in the frontline, within the patients' "habitat".

Visualising complexity

Examples of how different groups have worked through the activities using the template and other visual resources. Most activities had a balanced mix of choosing items from materials provided by the team (stemming from previous RIPEN work), and developing their own collaborative approach through discussing, describing, drawing, and structuring informatio and ideas.



REFLECTIONS

Participants' feedback:

"Good clear communication prior to the event. The briefing paper was extremely useful especially as hadn't attended previous meetings."

"Excellent resources and facilitation. It's a shame there was not more time to listen/give feedback."

Researchers' notes:

> By gathering a number of stakeholders with a variety of roles with the helathcare system, the group was able to realise the depth and scope of the work, and to examine how the expertise, roles and responsibilities of nurses meet the perspectives and practice of other professionals to co-design policy.

03

Reflective Practice

3.1 PARTICIPANTS' PERSPECTIVES ON RIPEN

In addition to eliciting participants' immediate feedback on methods at the end of each workshop (through brief structured questionnaires and group discussions), we sought their reflections on methods and any impacts on practice six months after the last Glasgow and London group workshops. This section draws primarily on these summative evaluations, using participants own words.

EXPERIENCES of the METHODS

Looking back, which (if any) of the methods used particularly helped you to re-envisage relevant infection practice ecologies?

I most enjoyed utilizing the visual tool of examining pressures (referring to Magnifier). I have kept and shared this with colleagues and found that they responded easier to this rather than simple word descriptions.

I really valued the use of pictures of past antibiotic use/misuse e.g. small pox ships etc and the discussions this created around accepted cultures at work regarding antibiotic use and nursing practices.

Actually the small group sessions of 'making rich pictures' really helped me…and they've stuck in my memory.

I found drawing a storyboard helpful - thinking through elements of a normal day and of the impact that activities would have on antimicrobial use and efficacy. I am more comfortable with troubleshooting small, local problems than with envisaging worldwide problems.

Group discussions and collaborative exercises with other disciplines of healthcare staff -listening to other practitioners' perspectives was informative and enlightening. Using creative methods for reflection which also encouraged lateral thinking making session content memorable.

Group discussions and art work (particularly using magazine cut outs rather than my drawing). Also, the between session 'homework' was very useful &prompted me to look in more depth at AMR information available.

It was really interesting looking at bringing ideas together using different methods to what would usually have been used. I particularly enjoyed creating the story boards from the first session and seeing how everything linked together by the end. I also liked the pre-session exercise which involved looking at photographs and linking ideas together from them.

I enjoyed the group working with others from different specialties as this illustrated both variation and the areas of commonality in antimicrobial practices and the richness of potential solutions.

From the feedback above it can be seen that many of the specific methods had useful, and sometimes lasting, impacts for participants. Perhaps the strongest theme, however, was the benefits derived from group work and the related discussions amongst practitioners working in different contexts and levels of speciality.

A number of participants also shared more general reflections on experiences of arts and humanities methods:

Brought a different depth to it in terms of understanding and meant … a lot more involved than in other research because the focus is different rather than just tick-sheets.

This has really helped me to focus on AMR outwith the rest of IPC practices. I've really enjoyed the creativity and the lateral thinking, and how to put science and art, joining the two together. They are seen as different but they can be very collaborative and informative. It's been revelatory and enlightening in a lot of ways.

Working with the arts based method really makes you think about what you are doing and probably challenges, maybe people like me who probably think about things in a kind of probably one-dimensional method whereas this has made me think on a much wider scale and really made me think about what we are going to do in future

LASTING IMPACTS

Looking back, what (if any) lasting impact/s has participating in RIPEN had on (i) your own and/or colleagues' professional practice, and (ii) your life outside of work?

I had a very keen interest in antimicrobial stewardship so not much has changed in that sense.What was interesting was seeing the different knowledge levels amongst staff groups.

It has explained to me more thoroughly what the issues are with antibiotic use and I can then explain more clearly and concisely to my own family as well as patients, why caution is required. So from a health promotion and prevention approach, this is where I really feel the impact of RIPEN, in both my professional and personal life.

It has opened my eyes, helped me focus on my clinical practice and question even more deeply than I did prior to attending RIPEN, of the relevance of antimicrobial resistance &prescription of antibiotics.

I think to have such a spread of different backgrounds all approaching a problem from a variety of perspectives has helped me think about this (and other problems) in a wider way. Additionally, I am now exploring other ways of using more visual approaches in other areas of my work.

The biggest change is that I make sure I understand exactly why a specific antibiotic has been chosen, rather than taking on trust that the other doctor had thought it through carefully before prescribing.

It has made AMR more personal as well as professional. I'm even more aware of maintaining my own health.

And it's got me thinking about the future. And I've always valued education but I think even more so after being here. If I've been educated, I want to educate others. And I see the lack of education within NHS currently in regards to AMR.

I feel more aware of my own practice and feel able to advocate in a more informed way. Being exposed to some of the old

photographs and news articles that other participants brought also made me think about things in a different way, and equipped me with different methods to advocate regarding AMR. Overall, the whole process was really enjoyable and 'different' which was enlightening.

Re impact on own and others professional practice, coincided with a health board acute sector change in wound swab use and antimicrobial dressing use so dovetailed nicely with being able to support questions and rationale for these amongst peers.

Experiences of different practitioners very useful and allowed me to introduce new ways of working in regards to my practices in infection control areas

Domestically changed most household cleaning products use to plant based and 'elbow grease' rather than what tended to buy without thinking.

From the feedback above it can be seen that participation in the project typically had benefits in terms of enhancing ways of thinking and seeing practice. Moreover, there was some evidence of participants making related changes in their professional and personal practices related to AMR.

3.2 RESEARCH TEAM REFLECTIONS

The full RIPEN research team comprised eight members with a range of expertise and experience, notably in: clinical nursing practice; nursing research and education; service design; design management; product design; visual communication; policy; history; interprofessional learning; health services research (especially infection prevention and control); and, not least, in experiencing health services as patients/citizens. While all the members contributed to the overall design and conduct of the study, two had particular ongoing responsibility for the design and delivery of the London Lab (Prendiville and Carvalho; both with primarily design backgrounds) and two had the same remit for the Glasgow Lab (Macduff and King; both with primarily nursing and health research backgrounds). This section synthesises reflections from these four members on designing and delivering this type of approach.

CO-DESIGN: STRUCTURING for CREATIVE CO-DISCOVERY and DEFINITION

As Section 2.1 outlines, the dual Lab structure was designed to enable the use and evaluation of a range of creative approaches to address the project's four subsidiary questions in turn through four workshops. These workshops would be broadly concomitant with the *discover, define, develop* and *deliver* phases of the Design Double Diamond Model. However, the idea was that, within this structure, the London and Glasgow Labs could each run with their own ideas for enaction, formulating objectives and related activities accordingly.

Section 2.2 provides insight into the resultant *what, how* and *why* of the eight workshops, with some illustration of content and formats. Reflecting on this collectively, we would characterise the work of the London Lab as tailoring a mix of creative, divergent, flexible tools and methods (coming mostly from the service/participatory design realm), while the Glasgow Lab tended to adopt and adapt more analytical, theory-based tools from research in nursing and the social sciences. Both Labs also used narrative and storytelling methods, with an additional combination of historical materials and the use of archival references.

We feel (and participants' reflections suggest) that this blend of clear structures and flexible development of processes has brought richness, depth and breadth to the approach as a whole, with the Glasgow and London work innovating from pre-existing strengths in a complementary way. The preparatory co-design work within each Lab required much dialogue and iteration between team members in order to arrive at a set of coherent tools that were collaboratively crafted and that would be employed to facilitate the accomplishment of the research objectives. Moreover, there was ongoing need for exchange of ideas between the Labs. In this regard the Glasgow team members were more reliant on the London team for technical help to realise their ideas, and in general the Glasgow team drew more on formats used (e.g. storyboards) or created (e.g. template for analysis of historic images) by their design colleagues than vice-versa.

As the above reflections suggest, a large part of the co-design in the RIPEN project has been co-design between and amongst team members. However, the key point here is that this designing of parameters and processes was undertaken with a view to creating conditions for our mixed groups of time-constrained participants to co-create understandings of current AMR related practices with each other and then co-design optimal, meaningful solutions for improvement. A recent Delphi study by Tsattalios (2019) highlights the importance of co-design for such visualisation in this field. A key principle from the beginning was that this should start from where participants were in enacting any practices related to AMR i.e. to initially define their own daily practices rather than feel pressure to replicate an ideal, externally espoused, agenda.

In this regard the storyboards proved invaluable in both Labs. The storyboards also facilitated insights into participants' thinking through discussions of AMR and IPC touchpoints and the roles of individuals and teams. The approach to this in the Glasgow Lab was informed by ideas about coherence and sense making from Normalisation Process Theory and proved useful in terms of understanding the way (and to an extent why) participants did, or did not, differentiate between AMR and IPC. However, the use of such analytic models (see also Kingdon's policy model in Glasgow Workshop 3) was necessarily limited in scope due to constraints of contact time with participants.

CO-DESIGN: PROCESSES of RESPONDING, REVISING, DEVELOPING and DELIVERING

The first workshops in both London and Glasgow allowed participants and the researchers to get to know each other and build confidence for working together over the coming year. In the process expectations and values were shared. A key point here was that the workshops treated participants as experts on their professional and personal practices, while the research team presented themselves as skilled in customised facilitation. This was foundational to our approach as it engendered mutual respect, working trust and a power dynamic where researcher control of workshop activities and progression flexed in response to participants' collaborative working and needs.

An example of the latter was seen when ideas exchange around the Magnifiers towards the end of Glasgow's second workshop was thwarted by time constraints. This led to changing the third workshop (originally scheduled to address a future with no/limited antibiotics) so that there was an initial session reviewing the Magnifiers as a basis from which to develop relevant policy proposals. This was a response to felt need from participants and the team, and also to the ongoing evaluation feedback highlighting the key value of collective conversations.

Thus, no matter how careful and rigorous the process of designing the workshops was, the application of methods was often exploratory, tentative and open to change. We were impressed by: the ease with which participants would move from one activity to the next, often requiring minimal guidance; the creative and imaginative solutions sparked between participants; and the very rich and varied outputs achieved. Within the group workshop context, there was no one method or tool that didn't work well and that we would not adopt and/or adapt again. Real time feedback from participants sometimes resulted in "tweaks" such as annotating the storyboards to distinguish individual and team priorities, but this was all to the better.

The one project method that didn't work well and was abandoned was the use of a Virtual Learning Environment (VLE) for learning resources, interim discussions and activities between workshops. After some initial use by a few participants at each Lab, participation subsided and momentum was lost. The reasons for this are probably manifold. Accessing the VLE was technically difficult/impossible for some participants, participants were

typically very busy clinicians, and the research team were not expert in the technology. Above all, however, participants and the research team preferred meeting in person to engage in this type of project work. Nevertheless, preparatory activities preceded each workshop and were successfully facilitated by direct e mail to individual participants who typically sent in or brought in their contributions.

The main challenge resulting from our exploratory approach was how to cumulatively and definitively make sense of the extensive and intricate data that was generated- a challenge that persisted from the preparation of each workshop through to the analysis of the data resulting from the final field activity, the Policy Workshop. Ongoing analysis of paper based outputs took place in an iterative way within and between both Labs through joint review and discussions. This is typical of less formal analyses for ongoing educational developments where the focus is on imminent actions.

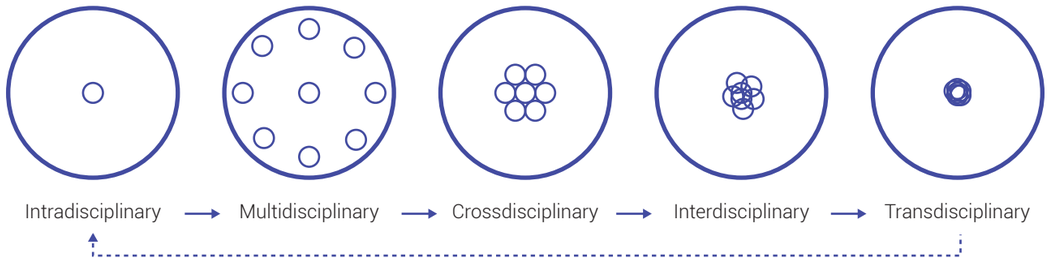
Given the specific research remit of the RIPEN project, more formal analyses and syntheses also took place between workshops. Analyses in Glasgow drew extensively on audio recordings of participants' reflections and discussions, using qualitative data analysis methods typically used in health services research (for more details see paper accepted for the forthcoming *Innovation in Nursing* edition of the Journal of Research in Nursing). Analyses in London tended more to visual description, interpretation and synthesis, as seen in the detailed analysis of the Policy Workshop event:
http://www.ripen.org.uk/uploads/1/1/6/4/116426417/summary_policy_workshop_analysis_18022020__1_.pdf

ISSUES ARISING: PRACTICAL and CONCEPTUAL

Underlying the reflections above are a number of practical and conceptual issues that are important to raise. Involvement of these small, mixed groups of participants was always subject to them being able to make time to attend (and travel) out with their normal work schedule. This set a context where all workshop time was seen as precious and it was a testament to the commitment of the participants that many managed to attend at least three workshops over the course of a year (and several attended them all).

The research team also had to manage competing commitments, making co-ordination challenging at times. The team work built up by members during development of the project proposal proved very useful in its subsequent enactment as working understandings and practices had been established to good effect. Given the geographic spread of the team, e mails, skype and phone calls were regularly used. However, we are unanimous that in-person encounters and work activities between team members were, by far, much more productive, enjoyable and effective than anything done remotely. This mirrors our participants' experiences and, interestingly, our research team initially tried using the *Slack* platform as a hub for sharing and discussion but this wasn't sustained. Ultimately the balance between significant Lab autonomy and overall co-ordination worked well, facilitated to a large extent by regular communications from the project leader.

The disciplinary diversity of the team undoubtedly enriched the project but necessarily raised questions about optimal integration. Reflecting on Jensenius's characterisation of possible disciplinary involvements (see below and https://www.arj.no/2012/03/12/disciplinarities-2/), and his definitions drawn from Stember's 1990 work,



our project typically comprised working that was: multidisciplinary (where people from different disciplines work together, each drawing on their disciplinary knowledge e.g. when initially formulating the proposal); crossdisciplinary (viewing one discipline from the perspective of another e.g. when approaching designers' conceptions of co-design from health service research conceptions of participatory action research); and interdisciplinary (integrating knowledge and methods from different disciplines, using a real synthesis of approaches e.g. using templates from design to learn from nursing history within workshops structured around the Double Diamond model). The concept of transdisciplinarity (creating a unity of intellectual frameworks beyond the disciplinary perspectives) was beyond the scope of the RIPEN project. However, it does seem reasonable to characterise the approaches used by our team as primarily arts and humanities based, while incorporating nursing's inherent combination of arts and science.

Disciplinary richness also expands the possibilities, and associated dilemmas, about relevant content coverage for an AMR focused workshop programme, and related impacts and outputs. As stated earlier, it is beyond the scope of this present methods report to detail all the outcomes from the Labs pertaining to subsidiary questions 2 and 3 of the project. However, an initial overview is available at:
http://www.ripen.org.uk/uploads/1/1/6/4/116426417/ripen_policy_lab_briefing_paper_web__1_.pdf, and some examples of visualisations are included in this report. We believe that using visual methods to facilitate participants' own perceptions of relevant AMR related content has added particular value by making tangible the various contexts, conceptions, individual roles, team activities, materialities, fluid boundaries, power relations and uncertainties that tend to characterise practice. The work of Olans (2016) and Broom (2017) suggest that such elements of AMR related nursing can often be invisible or hidden in plain sight, marginalising nursing's presence and voice.

A drawback to our approach is that it will necessarily result in partial or no coverage of potentially important areas. For example, we imagined that the re-envisaging of practice ecologies would result in sustained discussions on related ethical dilemmas (Johnstone 2016) but these didn't substantively develop in the time available. Moreover, it will in no way ensure comprehensive coverage of the wide range of competences set out in current antimicrobial stewardship programmes for nurses, such as the undergraduate focused curriculum developed by the University of Cardiff (Courtney and McEwen 2020). Rather our approach comes from a different angle and may have particular efficacy for established professionals and CPD.

A key tension in any programme that addresses antimicrobial resistance is the relative coverage and emphasis given to individual conceptions and behaviours (both professional and personal) in comparison with systemic and structural issues. The work of Chandler et al (2019) highlights the highly influential role of antibiotics as systemic infrastructure within society in general and healthcare in particular, making it important to view individual behaviours and relative agency in this light. Our project often handled this by using a *macro, meso, micro* and *nano* levels framework for group analyses of presenting issues. The London Lab were particularly successful in visualising systemic issues and relating them to policy (e.g. see London Workshop 3). However, we were also conscious of a need to temper focus on macro systems with a focus on tangible, presenting aspects. Thus, in Glasgow Workshop 4, participants were asked to project 12 years ahead assuming the continuing advancement of AMR (rather than a final antibiotic apocalypse) and with reference to their own 2018 storyboards.

Finally, a key aspect of our approach was to try to engage with participants in the round rather than exclusively in relation to their professional role. Donald (2016) notes how many AMR studies fail to consider that professionals have multiple identities, including family life and citizenship. The latter aspects were prominent in many discussions including use of antimicrobial products in the home, promotion of health literacy, and probiotics. This re-enforced a strong emergent theme that AMR nursing is about more than antibiotics and, to an extent, nurses emerged as microbial citizens (as posited by Roe, Veal and Hurley 2019), creatively negotiating borderlands (see Hinchliffe et al. 2013) spanning contexts that variously privilege communitas (e.g. community health nursing; home living) and immunitas (e.g. hospital isolation facilities; see Brown and Nettleton 2017).

04

Key Lessons & Specific Recommendations

4.1 KEY LESSONS

The collaborative working involved in RIPEN has generated much learning. Key lessons in relation to the methods used are now listed:

1. Arts and humanities-based approaches that focus on meaning, and give space and support for creativity, can be valuable in recognising and stimulating imaginative thinking amongst healthcare staff

2. It is apt and productive to start from what people are doing rather than what they are not doing

3. Educational and/or research initiatives committing to co-design approaches may first need to structure space for their own team to co-design parameters and processes that will facilitate other participants' own collaboration and co-design work

4. Use of an underpinning model such as the Design Double Diamond model can be valuable for providing structure for thinking and enactment

5. A workshop-based format can be particularly good for facilitating collaborative discussions and developments

6. Clear aims and objectives are useful for helping all participants to focus, but it is important to be flexible in the way methods are applied, leaving scope for exploration

7. Visual methods, such as those used in RIPEN, can add particular value by making tangible the various contexts, conceptions, individual roles, team activities, materialities, borderlands, power relations and uncertainties that tend to characterise healthcare practice

8. Arts and humanities methods can add value in facilitating formulation of policies in healthcare

9. Educational and/or research initiatives involving multiple disciplines need time to understand respective methodological approaches and resultant working can be multidisciplinary, cross-disciplinary or interdisciplinary in nature in different phases of the initiative

10. Educational and/or research initiatives with healthcare staff that focus on AMR should use methods that consider the influence of systemic, societal factors alongside the agency of individuals

11. Healthcare staff have multiple other identities that are relevant to their engagement with the topic of AMR, and methods should take this into consideration

12. RIPEN has produced an array of tools and processes that could be adopted and adapted usefully if the lessons above are taken into account

4.2 SPECIFIC RECOMMENDATIONS

In addition to the lessons listed it is possible to make a few specific recommendations for particular stakeholder groups:

FOR NURSES and OTHER PRACTITIONERS, EDUCATORS and RESEARCHERS WITHIN HEALTHCARE

• WHO Europe's 2019 review of evidence on the role of the arts in improving health and well-being supports the inclusion of arts and humanities education within the training of health-care professionals to improve their clinical, personal and communication skills. The methods and overall approach used in RIPEN are worth considering for the related purpose of helping established staff engage productively with the particular challenge posed by AMR

• Engaging expertise from design, history, ethics and other arts and humanities disciplines to work within a co-design approach is potentially productive

FOR PLANNERS and MANAGERS of HEALTHCARE SERVICES

• Nurses and other allied professions can be very creative in identifying and developing solutions to practice issues if given some space and support. Arts and humanities methods can add value by facilitating such creativity

FOR DESIGNERS, ARTISTS and RESEARCHERS

• Healthcare staff are experts on their own practice and value being afforded space and support for creative thinking and development activities. There is scope to capitalise on this for mutual benefit by designing initiatives collaboratively with staff

FOR POLICY MAKERS, ACTIVISTS and FUNDERS

• Crawford, Brown and Charise's (2020) Companion to the Health Humanities illustrates the scope for public health activism through the arts and humanities, which can in effect constitute a "shadow health service". There is scope to potentiate this further by proactively supporting health focused initiatives such as RIPEN which use arts and humanities methods

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